Community Leaders as Role Models to Promote Helmet Use in the Bristol Bay Area.

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Travel in rural Alaskan villages has become increasingly dependent upon the use of all-terrain vehicles (ATV) and snowmobiles. These are marketed as economical, efficient and versatile modes of transportation and recreation. Of the 20 reported fatalities in Alaska associated with ATV incidents in 1983-1984, 12 (60%) might have been prevented had the riders been wearing a helmet. Ten of these individuals died as a result of direct impact to the head.(1) Research during the past 40 years suggests that head injuries are a major cause of death among motorcyclists who crash and indicates that helmets are effective in preventing or reducing the severity of such injuries. The death rate among motorcyclists is three to nine times greater for riders not wearing helmets.(2) Studies completed in Newfoundland in the late 1980's also reflected an increase in head and neck injuries in snowmobile accidents directly related to lack of helmet use by the injured person.(3) These studies show that helmet use by ATV and snowmobile riders, as with motorcyclists, can significantly reduce severity of head injuries resulting from ATV and snowmobile crashes.

The use of role models from area villages appeared to be a viable method of empowering communities to positively affect helmet use rates. Through the utilization of role models in each community to promote helmet use, it was hypothesized that other members of the community would begin to wear helmets. This technique has been very successful in changing behavior in relation to the development of agricultural and health programs in Latin America, Africa, and Asia where social norms are often a barrier to change (4,5) Because of the traditional community structure and the traditional concept of leadership in Alaskan Native villages this technique of empowerment should be a well-suited and acceptable intervention.

The Bristol Bay Area Health Corporation (BBAHC) provides services to villages whose residents use ATV's and snowmobiles as their primary means of transportation. This study was initiated by observations which indicated that the use of helmets by area residents was virtually non-existent. An observational survey form was designed to collect data and answer the questions: What is the helmet use rate in the BBAHC service area? Could helmet use be increased solely through the use of role models in area villages?

BACKGROUND

The BBAHC Service Unit is located in southwestern Alaska with health care responsibility for a 46,000 square mile area. The 1990 census population of the area is 7,383 of which 4,914 are Native. The BBAHC provides health and injury prevention services to 32 villages in the region. The region's seasonal economy is primarily dependent on the dominant fishing industry. Other employment opportunities include government jobs, transportation employment, and service industries. The area is considered to be remote even by Alaskan standards, with a transportation system dependent on plane and ATV travel year-round, boating in the summer, and snowmobiles in the winter. An inter-linked road system in the region is virtually non-existent due to financial restraints and large expanses of permafrost and muskeg. A majority of area villages do not have a viable cash economy.

METHODOLOGY

Due to the seasonal fluctuations of area village populations it was important for the study to be conducted during the winter months, September-April. A helmet use observation form and directions for its use were developed for study purposes. This form was an original creation and no other form or document was used to assist in development. Helmet use was defined as a helmet being worn on the head of the driver or passenger. Of the thirty-two villages in the region, eighteen were selected to participate in the study. Selection criteria were based on the villages' willingness to participate and the availability of a Village Public Safety Officer, Community Health Aide, or other village employee willing to complete the observation form. Also, each village used in the study was required to have a "matching" village. Because of the diversity in populations and traditions, as well as size and location of villages in the region, it was necessary to include only matched villages. Villages were matched based on similarities in population, geographic location, and ethnicity. Five of the thirty-two villages are seasonally (summer only) inhabited and were excluded from the survey. The other nine villages either did not have anyone who would complete the survey or could not be successfully matched with another village. The remaining eighteen villages were paired and a group of 9 control villages and 9 experimental villages were randomly selected. Role models were

identified in each of the 9 experimental villages and provided with a helmet for use while riding their ATV or snowmobile. Role models were not identified in the control villages nor were helmets distributed. The total population of the experimental group of villages was 1432 compared with a total of 1651 in the control group. The person in each of these villages responsible for completing the observations received a packet containing the observation forms and directions. Verbal directions were also provided via telephone to increase standardization of observers. These observers were local residents and were able to accurately identify riders' age and sex because of their familiarity with community residents.

Pre-Intervention Survey

Observations were completed in 14 of the 18 villages during November and December of 1992. Results recorded on observation forms included vehicle type (ATV/snowmobile), type of rider (driver/passenger), helmet (yes/no), gender of rider, age of rider (youth/adult). Adults were classified as those riders 18 years of age and older. Youths were classified as those riders under 18 years old. These results were then returned to the Bristol Bay Area Health Corporation for analysis. The intervention used in the experimental group of villages included the identification of one adult and one teenager in each community as a leader or role model. These individuals were determined to be leaders/role models in the community through conversations with community health aides, village public safety officers, BBAHC staff members, school teachers, and school administrators. Identified role models in the experimental villages verbally agreed to wear the helmets provided by the Bristol Bay Area Health Corporation. Helmet size was provided by the individual selected to receive the helmet. A Lazer "Sno-Pro" full-face double-pane helmet was sent to the identified adult and teenage leaders in the community via "bush" plane during the first week in January of 1993. This method of shipment was necessary to insure that all individuals received their helmets at the same time. During mid-January, follow-up telephone calls were made to the villages to confirm that they had received the helmet and were wearing it.

Post-Intervention Survey

The post-intervention surveys were sent only to the 14 villages that provided original survey results. The post-intervention survey was completed during March, 1993. The helmet use intervention period included the months of January, February, and most of March. The survey instrument used was identical to that in the pre-intervention survey. Survey forms and directions were sent to the same individuals that completed the original survey. Completed forms were then returned to the Bristol Bay Area Health Corporation for analysis.

RESULTS

Of the 18 villages selected to participate, 14 provided observational data during the pre-intervention phase. There were 316 ATV and snowmobile riders observed during the initial observation period. One of 208 (.5%) of the riders in the experimental group and 1 of 108 (.9%) in the control group were wearing a helmet (Table 1). Both were adult male drivers. A total of 245 drivers and 71 passengers were observed (Table 1). Out of the 316 riders, 106 (33.5%) were female and 210 (66.5%) male. The number of adult riders was 208 compared with 108 youth riders.

During the post-intervention survey 14 out of 18 villages provided helmet use information based on the observational forms provided. A total of 230 riders were observed during the second phase of observations conducted in these villages. These included 9 of 141 of the riders (6.4%) in the experimental group observed wearing a helmet compared with 0 of 89 of the riders (0.0%) in the control group. Of the 230 riders observed, 166 (72.2%) were drivers and 64 (27.8%) were passengers. There were 136 male riders (59.1%) and 94 female riders (40.9%). The number of adults was 145 compared with 85 youth riders.

Of the 9 riders observed in the post-intervention survey experimental group wearing helmets, seven were classified as male youth drivers. The other riders were an adult male and a youth female. This is an increase in youth riders wearing helmets compared with the pre-intervention survey where there were no youth riders wearing helmets.

Table 1: Observed Helmet Use, Pre-Intervention Survey, Drivers and Passengers

HELMET USED	Driver (n=245)	Passenger (n=71)
YES	2	0
NO	243	71

Table 2: Observed Helmet Use. Post-Intervention Survey. Drivers and Passengers

HELMET USED	Drivers (n=166)	Passengers (n=64)
YES	9	0
NO	157	64

The two criteria identified as helmet use and role model intervention were tested for independence through a chi-square distribution as calculated using Table 3.

Table 3: Calculation of chi-square distribution

	HELMET USE		Total
	Yes	No	
Pre-Intervention Control	1	107	108
Pre-Intervention Experimental	1	207	208
Post-Intervention Control	0	89	89
Post-Intervention Experimental	9	132	141
TOTALS:	11	535	546

The null hypothesis was defined as: H_o: Role models and helmet use are independent

H_A: Role models and helmet use are not independent

Decision rule: Reject H_o if the completed value of chi-square is greater than or equal to 12.838 (dof = 3; p value = 0.05). The chi-square distribution based on helmet use and role model intervention was calculated as 18.587.

DISCUSSION

The increase in riders wearing helmets in the experimental group from 0.5% to 6.4% is an improvement. During this period, there were no other known helmet interventions in the villages. A primary study objective was to determine the power of role models alone to influence helmet use behavior. All of the villages in the study are isolated and are not subjected to influxes of advertising or new technologies, especially during the winter months. The significance of the experimental group results is supported by the constant control group results in which helmet use decreased slightly from 0.9% to 0.0%.

The study was limited by the amount of time the intervention was in place before the post survey was completed. A longer intervention period might be required to effect a substantial change in helmet use. Although role models in each of the experimental villages verbally agreed to wear the helmet provided, there was no method to confirm this agreement. Individuals that completed the observation forms were not provided with any training other than what was included in the directions and verbal direction via telephone.

CONCLUSIONS

The use of role models in rural Alaskan communities should be considered an option to positively affect behavior related to helmet use and injury prevention in general. Hundreds of helmets have been given away to village residents in the Bristol Bay Area and it is evident that these helmets are not being used. The reasons for this non-use are still unclear. I believe many residents do not feel there is a significant benefit to wearing the helmet. For example, the standard type of helmet may not be appropriate for use in severely cold weather or while hunting. These unique conditions may directly influence helmet use. Other factors, such as availability of helmets and cost, also have an effect on actual use.

Permanent and effective change will occur through the empowerment of individuals to make their own decisions related to helmet use as they realize how this directly influences the survival of their people. Increasing the intervention time period may allow for a more widespread acceptance of the concept that helmet use is a vital and socially acceptable practice.

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